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(30)Priority

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(54) DISK SUBSTRATE AND AROMATIC POLYCARBONATE COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an aromatic polycarbonate disk substrate which has precisely transferred the shape of a mold on molding and is suited in the production of an optical recording medium which records, reproduces or erases information by light, particularly a laser beam and the like.

SOLUTION: An aromatic polycarbonate composition comprises an aromatic polycarbonate having a specific structure and a viscosity average molecular weight of 12,000-17,000 and an ester of a 10-25C aliphatic monocarboxylic acid with a 2-10C aliphatic polyhydric alcohol, and the disk substrate meets the relationship between the quantity H1 (J/g) of enthalpy relaxation of the disk substrate and the quantity H2 (J/g) of enthalpy relaxation of the aromatic polycarbonate composition to be represented by the formulae: $0.45 \times H2 \leq H1 \leq 1.15 \times H2$, $1.5 \leq H2 \leq 3.0$ and, simultaneously, $0.9 \leq H1 \leq 2.9$.

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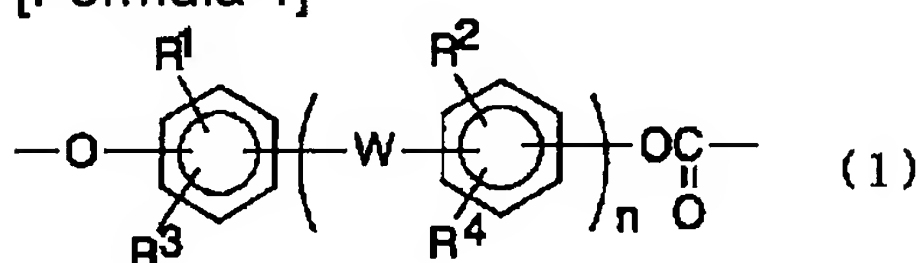
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CLAIMS

[Claim(s)]

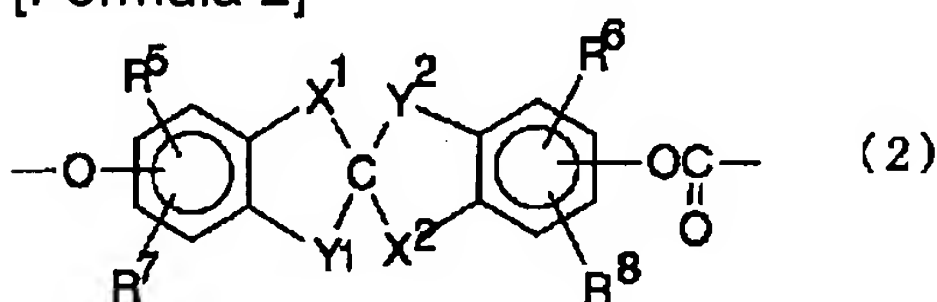
[Claim 1] (A) The following type (1)

[Formula 1]



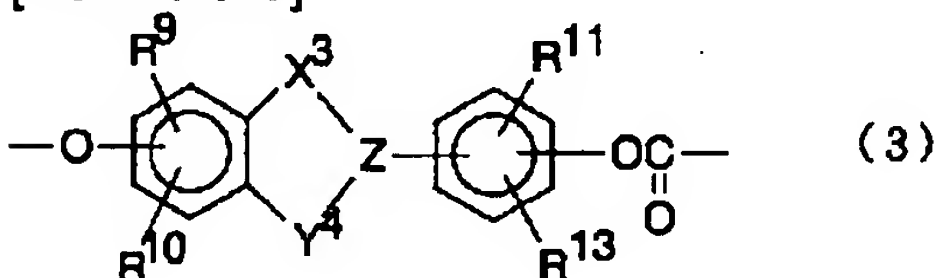
[-- here -- R1, R2, R3, and R4 -- mutually-independent -- a hydrogen atom and the alkyl group of carbon numbers 1-10 -- They are the aralkyl radical of carbon numbers 7-10, or the aryl group of carbon numbers 6-10. W And single bond, the alkylidene radical of carbon numbers 2-10, the alkylene group of carbon numbers 1-10, a carbon number -- five - ten -- cyclo -- alkylidene -- a radical -- a carbon number -- five - ten -- cyclo -- an alkylene group -- oxygen -- an atom -- sulfur -- an atom -- a sulfoxide -- a radical -- or -- a sulfone -- a radical -- it is -- n -- zero - two -- an integer -- expressing --] -- expressing -- having -- a repeat -- a unit -- the following -- a formula (2) --

[Formula 2]



They are the repeat unit expressed with [R5, R6, R7, and R8 are a hydrogen atom, the alkyl group of carbon numbers 1-10, the aralkyl radical of carbon numbers 7-10, or the aryl group of carbon numbers 6-10 mutually-independent here, and X1, X2, Y1, and Y2 are the alkylene groups of carbon numbers 1-5 mutually-independent], and the following type (3).

[Formula 3]



[-- here -- R9, R10, R11, and R13 -- mutually-independent -- a hydrogen atom -- They are the alkyl group of carbon numbers 1-10, the aralkyl radical of carbon numbers 7-10, or the aryl group of carbon numbers 6-10. X3 and Y4 are the alkylene groups of single bond and carbon numbers 1-5 mutually-independent. Z is the hydrocarbon group of the carbon numbers 1-6 containing the same carbon atom which has three joint hands. To coincidence at least one sort of repeat units chosen from the group which consists of a repeat unit expressed with] removed

when X3 and Y4 are single bond However, the main aromatic series polycarbonate whose viscosity average molecular weight *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne. is repeatedly carried out to a unit, and is 12,000-17,000, And it consists of an aromatic series polycarbonate constituent which comes to contain the ester of the aliphatic series monocarboxylic acid of carbon numbers 10-25, and the aliphatic series polyhydric alcohol of carbon numbers 2-10, and is the (B) following type (4).

$$0.45xH2 \leq H1 \leq 1.15xH2 \quad (4)$$

It is the disk substrate with which are satisfied [H1 is the amount (J/g) of enthalpy relaxation of this disk substrate, however H2 is the amount of enthalpy relaxation of the above-mentioned aromatic series polycarbonate constituent (J/g) here, and H1 is [H2 is a figure between 1.5-3.0, and] a figure between 0.9-2.9].

[Claim 2] The disk substrate according to claim 1 with which an aromatic series polycarbonate constituent contains the aromatic series polycarbonate 100 weight section, and the ester 0.005 of the aliphatic series monocarboxylic acid of carbon numbers 10-25, and the aliphatic series polyhydric alcohol of carbon numbers 2-10 - the 0.2 weight sections.

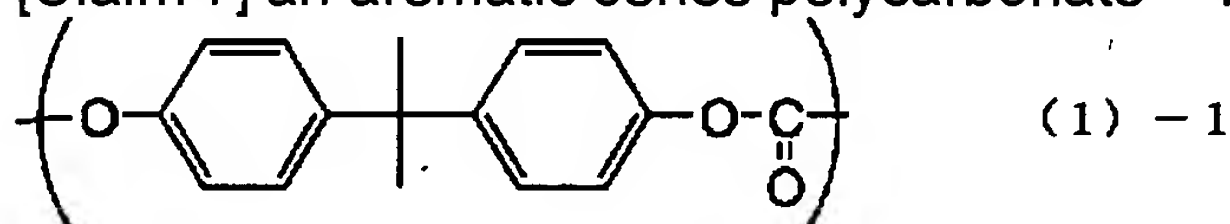
[Claim 3] The disk substrate according to claim 2 which contains the Lynn oxo acid 0.000001 - the 0.01 weight sections further in this disk substrate.

[Claim 4] It replaces with the above-mentioned formula (4), and is following type (4)- $10.5xH2 \leq H1 \leq 1.0xH2$. (4) It is a disk substrate given in any 1 term of claims 1-3 which satisfy -1 [the definition of H1 and H2 is the same as the above-mentioned formula (4) here].

[Claim 5] A disk substrate given in any 1 term of claims 1-4 whose H2 is the numeric value of the range of 1.7-2.5 (J/g).

[Claim 6] A disk substrate given in any 1 term of claims 1-5 whose H1 is the numeric value of the range of 1.0-2.5 (J/g).

[Claim 7] an aromatic series polycarbonate -- following type (1)-1 -- [Formula 4]



A disk substrate given [the repeat unit come out of and expressed] in any 1 term of main claims 1-6 repeatedly made into a unit.

[Claim 8] The following type (5)

$$K = (T_{gd} - 144)^2 + (H2 - 2.5)^2 \quad (5)$$

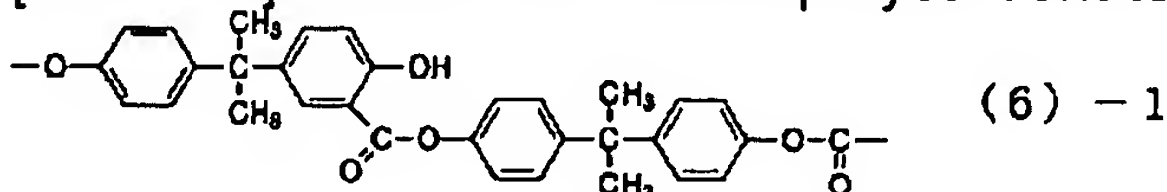
[-- T_{gd} is the glass transition temperature (degree C) of a disk substrate here, and the definition of H2 is the same as the above-mentioned formula (4).] The disk substrate according to claim 7 which has the value of K come out of and defined between 0-1.5.

[Claim 9] A disk substrate given in any 1 term of claims 1-8 manufactured by the melt polycondensation method under existence of an ester interchange catalyst from the aromatic series dihydroxy compound and carbonic acid diester to which an aromatic series polycarbonate is equivalent.

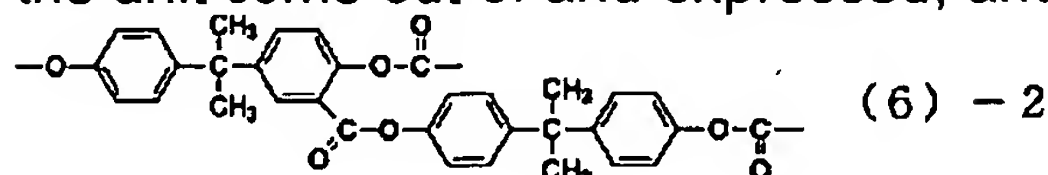
[Claim 10] The disk substrate containing at least one sort of alkali metal compounds chosen from the group which an ester interchange catalyst becomes from a lithium compound, a potassium compound, a rubidium compound, and a caesium compound according to claim 9.

[Claim 11] The disk substrate containing at least one sort chosen from the group which an ester interchange catalyst becomes from the 4th class ammonium compound and the 4th class phosphonium compound according to claim 9 or 10.

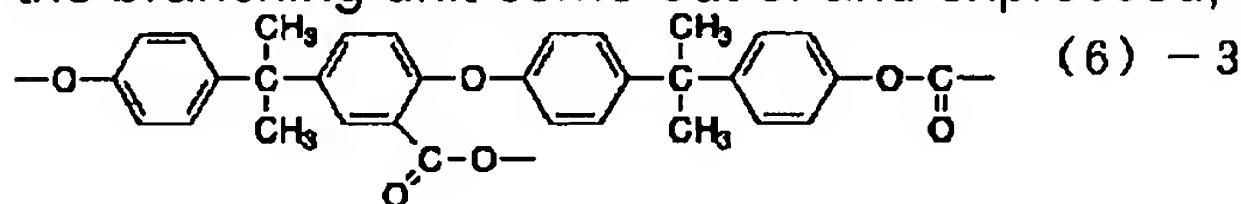
[Claim 12] an aromatic series polycarbonate -- following type (6)-1 -- [Formula 5]



the unit come out of and expressed, and following type (6)-2 -- [Formula 6]



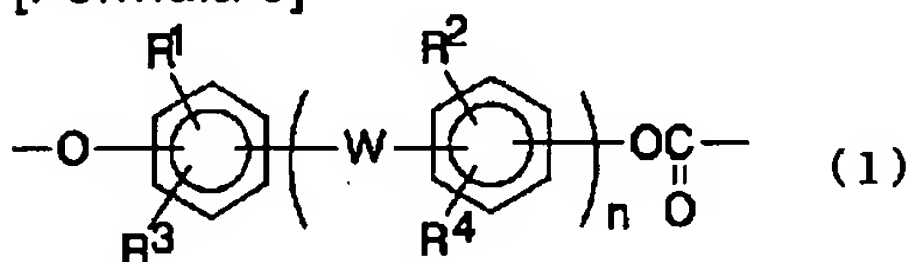
the branching unit come out of and expressed, and following type (6)-3 -- [Formula 7]



the branching unit come out of and expressed -- all carbonate association -- receiving -- 0.001-0.15-mol % -- the disk substrate according to claim 7 or 8 to contain.

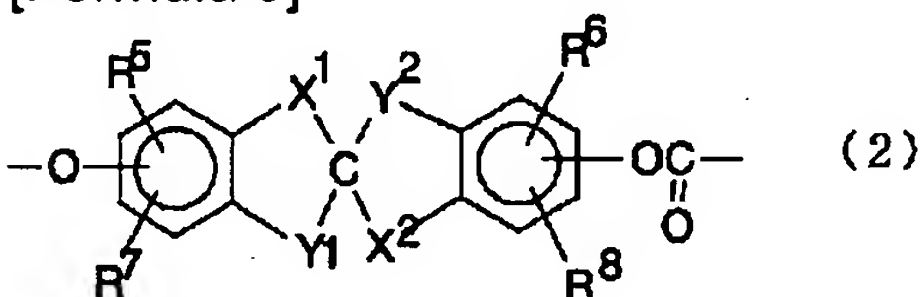
[Claim 13] (A) The following type (1)

[Formula 8]



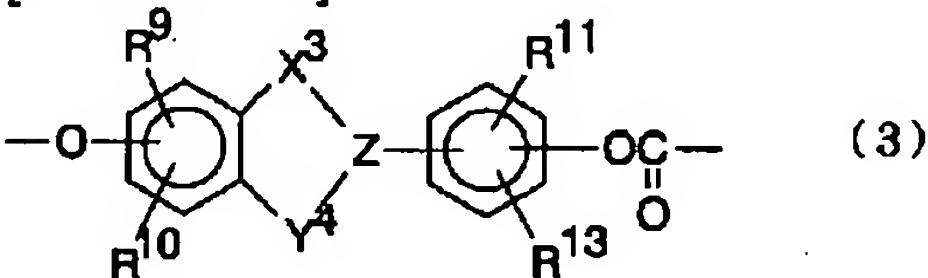
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[Formula 9]



They are the repeat unit expressed with [R5, R6, R7, and R8 are a hydrogen atom, the alkyl group of carbon numbers 1-10, the aralkyl radical of carbon numbers 7-10, or the aryl group of carbon numbers 6-10 mutually-independent here, and X1, X2, Y1, and Y2 are the alkylene groups of carbon numbers 1-5 mutually-independent], and the following type (3).

[Formula 10]



[-- R9, R10, R11, and R13 are a hydrogen atom, the alkyl group of carbon numbers 1-10, the aralkyl radical of carbon numbers 7-10, or the aryl group of carbon numbers 6-10 mutually-independent here, X3 and Y4 are the alkylene groups of single bond and carbon numbers 1-5 mutually-independent, and Z is the hydrocarbon group of the carbon numbers 1-6 containing the same carbon atom which has three joint hands. To coincidence at least one sort of repeat units chosen from the group which consists of a repeat unit expressed with] removed when X3 and Y4 are single bond However, the main aromatic series polycarbonate whose viscosity

average molecular weight *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne. is repeatedly carried out to a unit, and is 12,000-17,000, And it consists of an aromatic series polycarbonate constituent which comes to contain the ester of the aliphatic series monocarboxylic acid of carbon numbers 10-25, and the aliphatic series polyhydric alcohol of carbon numbers 2-10. And (B') the aromatic series polycarbonate constituent for disk substrate manufacture which has the amount H_2 (J/g) of enthalpy relaxation in the range of 0.9 - 2.9 J/g.

[Claim 14] The constituent according to claim 13 manufactured by the melt polycondensation method under existence of an ester interchange catalyst from the aromatic series dihydroxy compound and carbonic acid diester to which an aromatic series polycarbonate constituent is equivalent.

[Claim 15] The constituent containing at least one sort of alkali metal compounds chosen from the group which an ester interchange catalyst becomes from a lithium compound, a potassium compound, a rubidium compound, and a caesium compound according to claim 14.

[Claim 16] The constituent containing at least one sort chosen from the group which an ester interchange catalyst becomes from the 4th class ammonium compound and the 4th class phosphonium compound according to claim 14 or 15.

[Claim 17] Use as a material for disk substrate manufacture of an aromatic series polycarbonate constituent according to claim 13.

[Translation done.]